

SPECIFICATION

Linked bracelet

5 The present invention relates to a bracelet comprising male and female links.

Generally in bracelets of the type having male and female links, these are assembled laterally on the articulation axes. The fixing of the links to the articulation is effected by pins or screws, which poses problems in the machining of the blind holes provided for these pins or screws, on the one hand because these holes are long in relation to their diameter and above all by reason of the hammer-hardening of the material of the links, which have been subjected to several passes in dies, which easily causes fracture of the tools used for machining these holes.

The manual fitting of the pins or screws likewise poses problems when they are introduced into the above-mentioned blind holes, more particularly in the case where these assembling elements are subjected to thrust by springs in the case of detachable links.

25 The purpose of the invention is to realise a bracelet of male and female links which permits easy machining of the links and easy and rapid assembly and dismantling of the bracelet.

To achieve this aim, the bracelet according to the invention is characterised in that the said links comprise lodgements for key-pieces which effect the articulations between the said links.

Certainly it is easier to machine lodgements than long blind holes of small diameter in links the material of which has been hammer-hardened, and assembly or dismantlement is also facilitated by the use of key-pieces in these lodgements in place of pins or screws of small dimensions.

The invention will be described below by way of example with the aid of the drawing, wherein:-

FIGURE 1 is a section of the bracelet along the axis of articulation of the links,

FIGURE 2 is a section along the line II - II in Figure 1,

FIGURE 3 is a plan view of the key-piece, FIGURE 4 is a section along the line IV - IV in Figure 3,

FIGURES 5a and 5b show the profile of a bar in which the links are machined and cut out, and a finishing tool respectively, and

FIGURES 6a and 6b illustrate the process of machining of the links.

Figures 1 and 2 show the key-pieces 1 assembled in the links 2 of the bracelet B. The first key-piece 1' is truncated to permit rapid fitting of the bracelet on the watch case 8, on which the dial is designated by 7, and its rapid removal therefrom. The first link 2' is held in axial position by a test-screw 4, the test end of which penetrates into a milled aperture 5 formed in the case. As a variant, the first link can be soldered, welded or non-detachably fixed to the watch case. The fastener 3 of the bracelet B is held in axial

position by two test-screws 6 engaging in the last key-piece. Figure 2 shows the positioning of the test-screws 4 and 6 on the links. The upper part of the key-piece 1 engages in a lodgement or passage formed in the male part of the link 2 and passing completely through this part. The lower part of the key-piece enters a horizontal lodgement likewise formed in the male part of the link. The watch case 8 is machined so as to permit lateral engagement of the first link.

Figures 1 and 2 show how the links are engaged one into the other by their male and female parts and how they are held in axial position by the key-pieces 1, the lower extremities of which are engaged in the horizontal lodgements of the links. The pivot axis $a - a'$ of the links is determined by the apex of the upper part of the key-piece, this part being engaged in an aperture or recess of the lower part of the preceding key-piece.

Figure 3 is a plan view of the key-piece 1. This comprises an upper part 9 and a lower part 10 in which a recess 11 is formed. As indicated in Figure 4, the lower part 10 is bent through a certain angle in relation to the upper part 9. This bending permits of ensuring that in the position in which the bracelet is in use on the wrist the key-pieces are in a suitable position with a maximum area of inter-engagement. The upper outer edges 12 of the key-piece are rounded to facilitate the positioning of the key-piece in the assembling of the bracelet. They also permit easy and rapid dismantlement, for example for the purpose of adjusting the length of the bracelet. The key-pieces are cut out and bent from strip material.

It is also possible, according to the bracelet type, to utilise a key-piece the upper part 9 and lower part 10 of which are in the same plane, as indicated in dotted lines in Figure 4.

Figure 5a shows the link 2 with the vertical passage 14 passing through its male part and intended to receive the upper part 9 of the key-piece 1, and the horizontal lodgement 15 for the lower part 10 of the key-piece. The link is produced from a bar section having for example the configuration as illustrated in Figure 5a.

Figure 5b shows a finishing tool 16 for introduction into the vertical lodgement 14 of the link 2 to force machining burrs downwards, in the direction of the male part of this link, or to break these burrs. The tool 16 has a thickness in accordance with the width of the passage 14.

Figures 6a and 6b show the principle of the machining of the link 2. In a first operation the horizontal lodgement 15 is produced by a working station comprising two end-milling cutters 17 and 18. These cutters move alternately in the directions of the arrows F1 and F2 in Figure 6b, in order to avoid the formation of burrs at the points 19. In a second operation the vertical passage 14 in the male part of the link is produced by a working station comprising two slotting cutters 20 and 21, the spindles of which are fixed on a drum 22 moving on the axis 23 at the depth 24. After this machining two significant burrs

appear at the edges 25 and 26. The size of these burrs must not exceed the size of the lodgements 13 the key-pieces. The cutter 20 is cleaned by a jet of oil under pressure and is brushed during the working of the cutter 21. The latter then withdraws into the axis 23 of the drum 22 which carries out a rotation through 180° and presents the cutter 20 into the passage 14 to continue the machining of the latter. Finally the finishing tool 16 pushes the burrs 25 and 26 inwards.

The foregoing shows that action has been taken, both in the machining of the link and in the machining of the form of the key-piece, to avoid the formation of burrs or, if appropriate, to permit these burrs to be at least partially tolerated in order to permit easy and rapid assembly and dismantlement of the bracelet.

Moreover the machining of the links, effected by milling as explained above, can equally be effected by any other suitable process such as electro-erosion, ultrasonic cutting or a chemical process.

CLAIMS

1. Bracelet comprising male and female links, characterised in that the said links (2, 2') comprise lodgements (14, 15) for key-pieces (1, 1') which effect the articulations between the said links.

2. Bracelet according to Claim 1, characterised in that the said links (2, 2') are held in the axial position by the said key-pieces (1, 1').

3. Bracelet according to Claim 1, characterised in that the said link (2) comprises a horizontal lodgement (15) and a vertical lodgement (14) in its male part, the said lodgements receiving the said key-pieces (1).

4. Bracelet according to Claim 1, characterised in that the said key-piece comprises an upper part (9) and a lower part (10), the said upper and lower parts forming a specific angle between them, the upper outer edges of the said parts being rounded, the said upper part (9) comprising burr recesses (13) and the said lower part (10) comprising a recess (11), the said rounded edges and the said burr recesses facilitating assembly and dismantlement of the said link.

5. Bracelet according to Claim 4, characterised in that the upper part (9) and the lower part (10) of the said key-piece (1, 1') are in one and the same plane.

6. Bracelet according to Claims 3 and 4, characterised in that the articulation (a - a') of the links is produced at the level of the apex of the said upper part (9) of the key-piece engaged in the recess (11) of the said lower part (10) of the preceding key-piece.

7. Bracelet according to Claim 4, characterised in that the said angle permits a maximum area of engagement of the key-piece in the utilisation position of the bracelet.

8. Bracelet according to Claim 1, characterised in that it comprises a fastener (3) held in position by two test-screws (6) engaging in the lower part (10) of the last key-piece.

9. Process for manufacture of the link according to Claim 3, characterised in that it includes, at the end of machining, and operation of finishing of the said vertical lodgement (14) to remove machining burrs with the aid of a finishing tool (16), the said tool being introduced into the link from the female

part of the said link in such manner as to force the said burrs in the direction of the male part of the link.

10. Use of the bracelet according to Claim 1 for a watch, characterised in that the case of the said watch comprises a roller of suitable form to receive the first link (2') of the said bracelet, the said roller comprises an incision in its lower part forming a lodgement for an element (4) for the axial fixing of the said link, and in that the first key-piece (1') is truncated to permit rapid positioning and removal of the bracelet (B).

11. Bracelet as claimed in Claim 1 and substantially as described with reference to the accompanying drawings.

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appear at the edges 25 and 26. The size of these burrs must not exceed the size of the lodgements 13 the key-pieces. The cutter 20 is cleaned by a jet of oil under pressure and is brushed during the working of the cutter 21. The latter then withdraws into the axis 23 of the drum 22 which carries out a rotation through 180° and presents the cutter 20 into the passage 14 to continue the machining of the latter. Finally the finishing tool 16 pushes the burrs 25 and 26 inwards.

The foregoing shows that action has been taken, both in the machining of the link and in the machining of the form of the key-piece, to avoid the formation of burrs or, if appropriate, to permit these burrs to be at least partially tolerated in order to permit easy and rapid assembly and dismantlement of the bracelet.

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4. Bracelet according to Claim 1, characterised in that the said key-piece comprises an upper part (9) and a lower part (10), the said upper and lower parts forming a specific angle between them, the upper outer edges of the said parts being rounded, the said upper part (9) comprising burr recesses (13) and the said lower part (10) comprising a recess (11), the said rounded edges and the said burr recesses facilitating assembly and dismantlement of the said link.

5. Bracelet according to Claim 4, characterised in that the upper part (9) and the lower part (10) of the said key-piece (1, 1') are in one and the same plane.

6. Bracelet according to Claims 3 and 4, characterised in that the articulation (a - a') of the links is produced at the level of the apex of the said upper part (9) of the key-piece engaged in the recess (11) of the said lower part (10) of the preceding key-piece.

7. Bracelet according to Claim 4, characterised in that the said angle permits a maximum area of engagement of the key-piece in the utilisation position of the bracelet.

8. Bracelet according to Claim 1, characterised in that it comprises a fastener (3) held in position by two test-screws (6) engaging in the lower part (10) of the last key-piece.

9. Process for manufacture of the link according to Claim 3, characterised in that it includes, at the end of machining, and operation of finishing of the said vertical lodgement (14) to remove machining burrs with the aid of a finishing tool (16), the said tool being introduced into the link from the female

part of the said link in such manner as to force the said burrs in the direction of the male part of the link.

10. Use of the bracelet according to Claim 1 for a watch, characterised in that the case of the said watch comprises a roller of suitable form to receive the first link (2') of the said bracelet, the said roller comprises an incision in its lower part forming a lodgement for an element (4) for the axial fixing of the said link, and in that the first key-piece (1') is truncated to permit rapid positioning and removal of the bracelet (B).

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